



United States Department of Agriculture
Natural Resources Conservation Service

NE-FRD01-1 2011 Ranking Period 1

FRD01 – On Farm Research and Demonstration 1 Cover Crop Mixtures for Partial Summer Fallow Replacement on Wheat/Fallow Rotations

State Criteria for on Farm Research and Demonstration

Research Topic: Cover Crop Mixtures for Partial Summer Fallow Replacement on Wheat fallow rotations

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Name and brief description of the research entity: The University of Nebraska-Lincoln Panhandle Research and Extension Center (PHREC) located near Scottsbluff, NE. The faculty at the PHREC conduct applied agricultural research and Extension education programs in the Panhandle District.

General description and summary of research to be conducted: The proposed research will address the national focus on soil quality using Cover Crop Mixes as defined in SQL04 Use of Cover Crop Mixes enhancement. Both yields and soil water will be monitored to determine the impact that different types . We want to test both of these claims in the semi-arid environments found in the Nebraska Panhandle. Research on cover crop use in dryland cropping systems has been limited in the Nebraska Panhandle.

Three replicated treatments will be compared on fallow: 1) a cover crop mixture containing at least two different cool-season species, 2) a cover crop consisting of either spring triticale or oats, and 3) tilled summer fallow on soil water storage prior to winter wheat seeding and on subsequent winter wheat yield. The summer fallow can follow winter wheat or a summer crop grown the previous year, but must precede winter wheat sown in September.

A minimum of three replications of each treatment will be needed. The cover crops will be chemically terminated in late spring or early summer and winter wheat will be seeded across all treatments in the subsequent fall. The wheat following each treatment will be harvested for yield and tested for grain protein.

Geographic Area: All counties in the Nebraska Panhandle (Sioux, Dawes, Box Butte, Sheridan, Scotts Bluff, Morrill Garden, Banner, Kimball, Cheyenne, and Deuel) must be wheat growers with a wheat-summer fallow rotation.

Participant requirements:

- A detailed plan must be developed in conjunction with the researcher that provides project details, plot locations, on aerial photos and in written format and **be provided to NRCS prior to scheduling the project.**



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- Growers will be charged \$500 fee upfront to cover expenses incurred by the university research team for travel, equipment maintenance, lab fees, etc. over the course of the field study. Grant funding will be requested to cover these costs but is not guaranteed.
- All inputs for the research project, including wheat seed, cover crop seed, fertilizer, herbicides, farm equipment, and manpower will be provided by the grower. Growers will need to have access to a no-till drill to seed cover crops directly into wheat stubble and a drill to plant winter wheat and other equipment.
- Minimum of 60 acres will be needed for the replications. Growers must have their own wheat harvest equipment, preferably equipped with a yield monitor. Growers with their own sprayers and fertilizer applicators are preferred, but commercial herbicide and fertilizer applications are acceptable.
- Researchers will work directly with the producer to establish supply replicated plot plans for fallow treatments with and without cover crops and tillage. Soil water data will be collected prior to winter wheat seeding on all plots. Small biomass samples will be collected at the time of cover crop termination to estimate total biomass production from cover crops. They will also collect percent ground cover estimates after winter wheat seeding on all plots (those with cover crops, without cover crops and those tilled or no-tilled).
- Researchers must be present when wheat is harvested to collect grain samples for yield and/or grain quality.
- The research will last a minimum of two years but likely will cover a four year period in order to determine impacts on wheat yields in two different wheat harvest cycles.

Number and size of on-farm research sites needed: At least four dryland winter wheat growers in the Nebraska Panhandle with wheat fallow rotations under dryland cropping systems with at least 60 acres of fallow with replicated treatments applied followed by 60 acres of winter wheat.



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Documentation: Complete the following Table and provide the documentation listed below:

Tract	Field(s)	Acres Planned				Acres Applied (completed by operator)
<i>EX. 1</i>	<i>1</i>	<i>20</i>				<i>20 acres</i>

I certify that the following information meets specifications and has been provided to NRCS:

1. Complete the table above and provide a map with delineation of the area where the enhancement was applied including partial fields.
2. Photographs of a representative number of fields/plots showing demonstration or research.
3. Final report based on University of Nebraska Extension Service that documents that details findings of the research project including soil moisture, inputs, yields, plot records, replicated treatments and all other pertinent information on each plot.

Certified by: _____ **Date:** _____